**CLAIMS:**

1. A hybrid central office for serving a plurality of subscriber lines while serving as a virtual access tandem to a subnetwork of central offices having a connection to an ATM backbone network, comprising:

an inter-working bearer traffic interface to the ATM backbone network to permit the hybrid central office to receive bearer traffic from and transfer bearer traffic to any one of the central offices in the subnetwork, the inter-working bearer traffic interface being adapted to convert pulse code modulated (PCM) data to ATM cells and vice versa;

a trunk interface to the public switched telephone network (PSTN) to permit the hybrid central office to receive PCM data from and transfer PCM data to the PSTN; and

a computing module having a signaling interface to the ATM backbone network to permit the computing module to send messages to and receive messages from any one of a plurality of distributed-access bearer traffic interfaces respectively associated with the central offices in the subnetwork, the computing module being adapted to access information for routing inter-office calls originated at or terminated at any one of the central offices.

2. A hybrid central office as claimed in claim 1 wherein the computing module is adapted to send control messages through the signaling interface to the distributed-access bearer traffic interfaces respectively

associated with first and second central offices in the subnetwork to initiate the setup of connections through the ATM backbone network to complete an inter-office call without routing the call through the inter-working bearer traffic interface.

3. A hybrid central office as claimed in claim 2 wherein the computing module is adapted to receive ISDN User Part (ISUP) messages associated with the inter-office call and to modify the ISUP messages and forward the modified ISUP messages to an appropriate one of the first and second central offices so that the ATM backbone network is transparent to other central offices in the subnetwork.

4. A hybrid central office as claimed in claim 3 wherein the computing module is adapted to modify the ISUP messages by changing an originating point code (OPC) and a destination point code (DPC) in each message and replacing a circuit identification code (CIC) associated with an originating end of the inter-office call to a CIC associated with a terminating end of the inter-office call, or vice versa.

5. A hybrid central office as claimed in claim 1 wherein the inter-working bearer traffic interface supports bridges across a switch fabric of the hybrid central office for calls that originate in the PSTN and terminate at one of the central offices in the subnetwork or originate at one of the central offices and terminate in the PSTN.

6. A hybrid central office as claimed in claim 5 wherein the inter-working bearer traffic interface is adapted to generate an application instance for each of the bridges across the switch fabric of the hybrid central office.

7. A hybrid central office as claimed in claim 6 wherein the inter-working bearer traffic interface is adapted to terminate cached switched virtual circuits (SVCs) used to support calls that originate in the PSTN and terminate at one of the central offices or originate at one of the central offices and terminate in the PSTN.

8. A telephone subnetwork which utilizes an ATM backbone for completing switched telephone calls, comprising in combination:

a plurality of central offices connected to the ATM backbone by respective interfaces for converting PCM data to ATM cells and vice versa, each of the central offices being respectively adapted to serve a plurality of subscriber lines; and

a one of the plurality of central offices being further adapted to function as a virtual tandem for the subnetwork and to control inter-office call routing for calls that originate or terminate in the subnetwork.

9. A telephone subnetwork as claimed in claim 8 wherein the central office adapted to function as a virtual tandem comprises:

a computing module having a signaling interface to the ATM backbone, the computing module being adapted to perform translation and routing functions for inter-office calls originating or terminating in the subnetwork;

to select an inter-working bridge for calls originating in the PSTN and terminating in the subnetwork or originating in the subnetwork and terminating in the PSTN; and

to send fabric control messages to the interfaces in the network to effect control of ATM circuits for transferring inter-office calls through the subnetwork;

a trunk connection to the PSTN to permit completion of calls that originate in the PSTN and terminate in the subnetwork or originate in the subnetwork and terminate in the PSTN; and

an interface to the ATM backbone adapted to support application instances that are associated with the inter-working bridges, a connection broker for controlling TDM-to-ATM bearer path conversions and inter-working control, and a messaging connectivity function to perform TDM-to-ATM address mapping.

10. A telephone subnetwork as claimed in claim 8 wherein each of the plurality of central offices in the subnetwork is connected to the ATM backbone by a single large trunk group and all inter-office calls originated at the respective central offices, except for the one adapted to function as the virtual tandem, are routed to the respective single large trunk groups.

11. A telephone subnetwork as claimed in claim 9 wherein the computing module has access to routing information to enable the virtual tandem to route all inter-office calls that originate or terminate within the subnetwork and the fabric control messages contain origination and termination addresses as well as connection mapping information to enable the interfaces to map a virtual circuit used to transfer a call through the ATM backbone network to respective originating and terminating trunk members in the respective single large trunk groups.

12. A telephone subnetwork as claimed in claim 11 wherein the virtual circuits used to transfer calls through the ATM backbone are switched virtual circuits (SVCs).

13. A telephone subnetwork as claimed in claim 12 wherein the SVCs are cached SVCs, idle SVCs being stored in a cache and used for calls on an on-demand basis.

14. A telephone subnetwork as claimed in claim 13 wherein cached SVCs used for calls between the central offices and the virtual tandem are terminated on the virtual tandem but the SVC caches are managed by the respective interfaces associated with the central offices, rather than the interface associated with the virtual tandem.

15. A telephone subnetwork as claimed in claim 8 wherein the central office that serves as the virtual tandem also supports a trunk group connected to the PSTN and calls that originate in the subnetwork and terminate in the PSTN are routed to the trunk group connected to the PSTN.

16. A method of completing an inter-office call originating at a central office in a subnetwork that includes a plurality of central offices which respectively serve a plurality of subscriber lines, each of the central offices being connected to an ATM backbone network by an interface that converts PCM data to ATM cells and vice versa, a one of the central offices serving as a virtual tandem for the subnetwork, comprising the steps of:

a) at the originating central office, formulating an IAM relating to the inter-office call, the IAM containing a destination point code (DPC) of the virtual tandem;

b) receiving the IAM at the virtual tandem and translating a called number in the IAM to determine a next hop destination for the call;

c) modifying the IAM to change an originating point code (OPC) to the point code of the virtual tandem and the destination point code (DPC) to the point code of the next hop destination for the call, and forwarding the modified IAM to the next hop destination for the call;

d) formulating a fabric control message and sending the fabric control message through the ATM backbone to a terminating interface in the subnetwork to

enable a virtual circuit through the ATM backbone to transfer the call; and

e) sending a connection message from the terminating interface in the subnetwork to an interface associated with the originating central office to enable the virtual circuit for transferring the call through the ATM backbone.

17. A method as claimed in claim 16 wherein the call terminates at a central office in the subnetwork and the terminating interface to which the fabric control message is sent in step d) is an interface associated with the terminating central office, the virtual circuit being enabled through the ATM backbone directly between the interface associated with the originating central office and the interface associated with the terminating central office.

18. A method as claimed in claim 17 wherein the virtual circuit that is enabled is an SVC that is idle and stored in a cache.

19. A method as claimed in claim 16 wherein the call terminates at a central office in the PSTN, the next hop destination for the call to which the modified IAM is forwarded in step c) is in the PSTN; the terminating interface to which the fabric control message is sent in step d) is an interface associated with the virtual tandem; and

the virtual circuit enabled through the ATM backbone in step e) is an SVC enabled between the

interface associated with the originating central office and an interface associated with the virtual tandem.

20. A method as claimed in claim 19 wherein the method further includes the steps of:

establishing an inter-working bridge between the terminating interface and a TDM peripheral associated with a trunk connecting the virtual tandem to the access tandem; and

managing the inter-working bridge for a duration of the call.

add A2